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Sustainable development and women's leadership: A participatory exploration of capabilities in Colombian Caribbean fisher communities

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ABSTRACT

In coastal regions that traditionally depend on ecosystem services, sustainable development is of paramount importance. Within Colombia, a strong national policy focus on using natural resources and on UN Sustainable Development Goals (SDGs) has driven development, moving the country from the bottom to the top of the Official Development Assistance (ODA) list. However, problems with gender inequality, marginalisation and other social aspects exist here, as in similar countries with good economic indicators. Using participatory research methods, and a six-day long residency (24 women leaders in Dique Channel, Colombia) we analysed elements of women's leadership, selected by local female community leaders, which could facilitate pathways to sustainable livelihoods in marginalised Colombian Caribbean fishing communities. Women leaders explored what sustainable development and leadership meant to them, linking these two concepts explicitly to their feelings of empowerment. They felt empowered by their capabilities around education, leadership, service, value and action and disempowered by gender inequality, level of access to education and difficult family situations. Reciprocal positive feedback loops existed between women's perceived leadership capabilities, and education or development of networks. However, despite the empowerment derived from natural resources, their leadership for sustainable development and service-orientation, women leaders struggled to identify tangible benefits for their community. Therefore, enabling women leaders to foresee possible solutions beyond the short term is an important point for development. In addition, male leaders recognized the potential of women leaders. Enlisting their support is essential for development of women leaders as a group. These elements will need to be further explored with the community, to identify pathways for future community wellbeing.

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1. Introduction

Coastal regions provide a variety of ecosystem services (e.g. food, flood protection, water, culture) due to their high accessibility and biological productivity. Coastal regions have therefore had concentrated human activity for millennia (Burke et al., 2001). Nearly 40% of coastal regions around the world depend on coastal resources for economic prosperity, food security and community wellbeing (Reid et al., 2005; Janetos et al., 2005).

Colombia, a South American country with Pacific and Caribbean coasts, is one of twelve megadiverse countries. Here, development is driven through national policy focused on the use of natural

resources and the UN Sustainable Development Goals (SDGs) (Minambiente-Colombia, 2015, 2019). In 2014 Colombia was moved from the lower to the upper end of the Official Development Assistance (ODA) list for developing countries due to improvement in national economic indices (OECD, 2019).

However, inequalities between rural, coastal or marginalised areas and urban areas are present even in countries with good economic indicators (Richter, 2017) like Colombia. Although surrounded by rich coastal ecosystem services, people in rural, coastal or marginalised areas lack the means for sustainable economic development. The main economic activities in the Colombian Caribbean coastal regions include fisheries, aquaculture and tourism (Minambiente-Colombia, 2015; FAO, 2003; World Travel and Tourism Council, 2017). These activities are closely linked to the use of coastal ecosystem services.

In economic terms 49% of Colombian fisheries production comes

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from marine fisheries, 43% from aquaculture (marine or freshwater) and only 8% from continental fishing (Minambiente-Colombia, 2015). Although fisheries (including aquaculture) represent only 0.2% of Colombia's Gross Domestic Product (GDP) (FAO, 2003), they are the main source for food, jobs and income in rural and coastal areas and artisanal fishing is the last, unexploited resource for marginalised communities (OECD, 2019). Here, and in areas affected by internal conflicts since the 1940's (Minambiente-Colombia, 2015), economic opportunities are scarce. Since one of the SDGs is to end poverty and hunger, fishing communities have become the perfect model to assess food security in coastal areas (FAO, 2005). Therefore, future economic development needs to pursue quality of life for communities whilst preserving natural resources, if the country is to work within sustainable development principles.

Climate change has had measurable impact on Caribbean coastal ecosystems. Changes in species distribution, local climate, sea level rise, floods and droughts, agricultural productivity, and coral reef mortalities due to increases in sea surface temperatures (Reid et al., 2005), have led to fisheries decline (FAO, 2003). Since coastal and rural communities have a strong dependence on ecosystem services, their degradation is a major factor causing poverty in these communities (Reid et al., 2005). Thus, climate change and internal conflicts have contributed to Colombian coastal fishing communities' extreme poverty. In this setting, the challenges of sustainable development are acute and need to be addressed urgently, in order to conserve natural resources.

Sustainable development research suggests that its implementation relies on community participation, empowerment, self-organisation and context specificity (Ghai and Vivian, 2014; Butler et al., 2017; Macdonald, 2017; Warburton, 2018; Kusnandar et al., 2019). National (National Development Plan, 2018: p.74) and international (Convention on Biodiversity, 2019) policy frameworks emphasize gender equality and the role of women in sustainable development. In Colombian coastal areas, women play a pivotal role in the stability of family and social structures. Here, subsistence fishing strengthens family and community cohesion (Justino et al., 2018). However, there is a dearth of sustainable development research around vulnerable communities in Latin America and the global south (Bértola and Williamson, 2017) through feminist lenses (Jaquette, 2017). Therefore, addressing sustainable development challenges requires new participatory research with women.

The role and work of women may have been underestimated in progressing towards the SDGs (e.g. Adams et al., 2018; Cole, 2017), and the engagement of women leaders could enable an expansive interpretation of sustainable development. Therefore, it is important to promote women's leadership to maximize both the SDGs and women's well-being.

In the literature, approaches to women's leadership vary between 'developed' and 'developing' countries. In 'developed' countries, women's leadership is considered in the context of boardrooms, banking, finance and business (Hoobler et al., 2018). In developing countries and rural communities women's leadership is considered in the context of public services such as schools and healthcare (e.g. Dhatt et al., 2017); entrepreneurship related to microfinance and Small and Medium Enterprise (SME) (e.g. Strøm et al., 2014); and women's participation in local governance (Evans et al., 2019).

Women's leadership in the context of sustainable development is a developing topic, and particularly in rural communities, there is little recent work explicitly related to the SDGs. Notable exceptions include studies on women-to-women entrepreneurial networks in energy use (Heuër, 2017), women's pathways to leadership in the context of urban water governance in Malawi (Adams et al., 2018), and water use for tourism in Indonesia (Cole, 2017). Cole's work

showed how social norms and outside pressures (e.g. tourism) conspire with a range of other socio-political factors to reinforce gender inequalities. Adams et al. (2018) concluded that equitable participation or women's empowerment did not necessarily happen, even though women were key to the use and conservation of water as a resource, while a recent study by Shinbrot et al. (2019) interviewed 120 leaders in sustainable development and concluded that women and their male allies needed to work together to change structures and perceptions of women's leadership.

Thus, gender inequality is often entrenched and further work on women's leadership in rural communities in the context of sustainable development is therefore required. In the Caribbean region of Colombia, despite some work on community leadership and food security (http://pdf.wri.org/mea_synthesis.pdf, Saavedra-Díaz et al., 2016), there is still a gap in the literature on women's leadership and sustainable development, particularly in relation to inequalities (Bértola and Williamson, 2017; Jaquette, 2017).

Previous literature suggests that development initiatives should focus on projects that 'originate from the needs and voices of participants' (Steeves and Kwami, 2017 p.177) and are not just 'conduits for welfare' (Jaquette, 2017 p.256). Designing a project to explore the potential for women's leadership in sustainable development thus requires a participatory approach rooted in the community's own perception of their needs and aiming to result in empowerment.

2. Theoretical perspectives on women's leadership for sustainable development

This section examines theoretical perspectives related to women's involvement in sustainable development and resource use in rural communities. The ideas of feminist political ecology and the human capabilities approach are considered within an anti-neoliberalist reading, for their utility as theoretical lenses applicable to the present work.

The approach of feminist political ecology provides one way of considering how social and environmental factors interact with ideas of identity and their relationship to ecological processes (Sundberg, 2017; Gillespie and Perry, 2018). Rocheleau (2010, 2013) advocates a feminist political ecology approach in the Encyclopedia of Geography, showing how the concept gives a more solid base to sustainable development efforts. The approach was originally developed "... to address the current gender imbalance between rights and responsibilities in resource management and its effect on rural peoples' abilities to maintain diverse livelihoods and complex landscapes and to protect the distinct ecosystems on which they and many other species depend." (Rocheleau, 1995, p.14).

Recent work on resource use in rural areas suggests that gender effects exist even where there is the will to serve women's needs and interests. For example, Adams et al. (2018) and Cole (2017) investigated the role that women could play managing water as a resource. They explored the hegemony of already entrenched attitudes and approaches in water use, concluding that these attitudes only "serve to suppress women's agency and reinforce existing gender-based inequalities" (Adams et al., 2018, p. 133). The authors used feminist political ecology to focus on inequalities arising from the effects of environmental problems that have greater negative effects on women than on men. Feminist political ecology thus adds gender to the complex mix of factors that political ecology identifies in the balance between humans, nature and the physical environment.

In a variety of contexts and especially in rural communities, negative consequences of decision making around the rights and responsibilities pertaining to natural resources, may be felt

disproportionately by women (e.g. Cole, 2017). However, considering rural livelihoods and women's leadership from a feminist critical theory perspective risks assuming a 'neoliberal' agenda. This agenda explicitly conceptualizes women and their work in a world largely constructed by and for men. It has given rise to an anti-neoliberal movement that rejects both capitalism and individualism and may see critics as cynical, naïve or complicit in the forces of oppression (Jaquette, 2017). However, ideologically, women's development projects cannot simply adopt an 'anti-neoliberal' approach, waiting for a world where capitalism is not a reality.

Recent history of feminist practices in development projects is further detailed by Jaquette (2017), who questions the hegemony of anti-neoliberalist thinking. The result can thus be a refocusing of attention on issues key to women's wellbeing, such as women's work, individual agency and ability to engage with the state. Her analysis suggests that a pragmatic approach to women's role in sustainable development is hindered by uncritical anti-neoliberal positions that feminist critical theory may espouse (Huckle, 2008).

Thus, it is important to consider critical but pragmatic approaches that includes focus on women's work, wellbeing and being heard at local and national level. Empowerment of women that foregrounds control over resources and integrates a re-valuation of caring roles that can be remunerated, are also important goals. As Jaquette (2017) states, the 'hegemony of anti-neoliberalism' has distorted the way we think about issues of 'women's work', and she suggests that there might be value in the use of other theoretical perspectives.

One approach that argues for reform of neoliberalism via a feminist lens is Martha Nussbaum's vision of Sen's Human Capabilities Approach (based on original work by Sen (1999) and further developed by Nussbaum (2011)). Sen's idea considered measuring a nation's success not in terms of its economic output (e.g. GDP), but instead using measures based on human wellbeing. Capabilities thus describe an individual's real freedoms to choose their 'beings and doings' from which they can then select the functionings they wish to achieve. The social context in which this occurs is also explicitly considered as part of the concept.

The capabilities approach proposes a non-resource-based model: it is not equity of resources that is sought, but equity of freedom to expand capabilities. Thus, for an individual living in a fishing community, 'being' a fishing professional may be an important capability to seek and develop. 'Doing' the work of, for example net mending or selling may also be a well-developed and valued capability. 'Being university educated' or 'being a community leader' may not be capabilities fully developed, perhaps because the freedom to do this is not part of the opportunity set of this individual. This may be due to the individual's social context, lack of resources or existence of prevailing norms that make this capability more difficult for the individual to expand.

Expansion of an individual's capabilities may be the result of education, derive directly from experiences, or be achieved via shifts in social and/or political norms and values. Preferences will be formed (adaptive preference formation) in relation to prevailing social norms and values. Critics of this approach, suggest that it is individualistic and a more collectivist approach is more appropriate, particularly in relation to sustainable development (Spahn, 2018). However, it could be argued that one choice an individual can make is to act collectively or argue for more autonomy as part of an expanded capability set.

Theory thus provides some helpful lenses for a consideration of leadership by women in seeking to achieve sustainable development. While there may be a tendency for leadership of communities to default to male leadership (Born et al., 2019), there are some clear reasons why women leaders may have different and more holistic notions of community leadership, which could

provide pathways to sustainable community livelihoods (Shinbrot et al., 2019). These are relatively unexplored.

There is thus a gap in the literature regarding women's leadership and sustainable development in fishing communities, particularly for developing countries. Combining a human capabilities approach with the ideas of feminist political ecology allows for a consideration of the complex dynamic forces in rural fishing communities in terms of environment, human wellbeing and socio-economic issues. A capabilities approach also provides a more empowered view of marginalisation (Von Jacobi et al., 2017). Therefore, this paper focuses on the following research question: How do elements of women's leadership, as selected by local communities, facilitate pathways to sustainable livelihood in Colombian Caribbean fisher communities?

3. Case study background

The study area was the Dique Channel in the Colombian Caribbean (Fig. 1), an artificial branch of the Magdalena River, constructed by Spanish people in the 1650s to connect Colombia's interior with Cartagena (Molares, 2011). The area has a lower population density (87k vs 1,000k inhabitants) than Cartagena, a higher rate of unemployment or informal employment (6.8% vs 5.8%), high poverty (52% vs 29.8%), poor transport links, seasonal industry, lower education levels than Cartagena (46% vs 49%) and lacks a central town (DANE, 2019; DNP, 2015). These are all measures of traditionally marginalised areas (Richter, 2017).

The Dique Channel, a freshwater ecosystem, is characterised by dry tropical forests, with high humidity (70–92%) and high temperatures (24–33 °C) throughout the year, due to its proximity to the Caribbean Sea, mountains, lagoons, and the effect of Alisios' dominant winds (Aguilera, 2006). The wetlands are of high conservation priority due to the diversity of birds, mammals, reptiles, amphibians, freshwater fish, invertebrates and plants. This diversity brings economic (ecosystem) services such as easier access to water, fisheries, agriculture, grasslands, wood, transport, recreation and tourism. The connected lagoons are an important element for the fisheries because they allow natural migration between the river and the coast, and survival of several fisheries, including 12 species of commercial importance. However, deforestation, droughts, overhunting, dredging of the Channel, and bad management of wastewater (85% goes directly to the Channel) has dramatically reduced natural freshwater fisheries (Aguilera, 2006). In ecological terms, the area is part of the coastal and marine ecosystem of the Magdalena River (Saavedra-Díaz et al., 2016), influencing the southern Caribbean.

The Channel (average depth 2.5m, average width 65m) covers 113 km between Calamar (Bolívar Department) and Cartagena Bay (Fig. 1) crossing several freshwater lagoons and depressions, and giving the Channel a leaning 'S' shape. The extent of the 19 Dique Channel municipalities is 531,700Ha, from which 31% belong to the departments of Atlántico, 12% to Bolívar and 10% to Sucre (other departments 47%). The channel is a natural boundary between the departments (Aguilera, 2006). A paved road exists between Cartagena and Santa Lucia running parallel to the Channel, allowing terrestrial travel between the town and the city. Terrestrial travel tends to be slower than river transportation (Aguilera, 2006) (Fig. 1).

In 2010 the Dique Channel flooded its surrounding plains which had devastating environmental, social and economic consequences. This led to the organisation of fishing communities and associations in the area. The region was identified as a potential area to study vulnerable fishing communities because: it was not located in a marine protected area; it was historically recognized as a fishing community; it relied on fishing as one of its primary economic

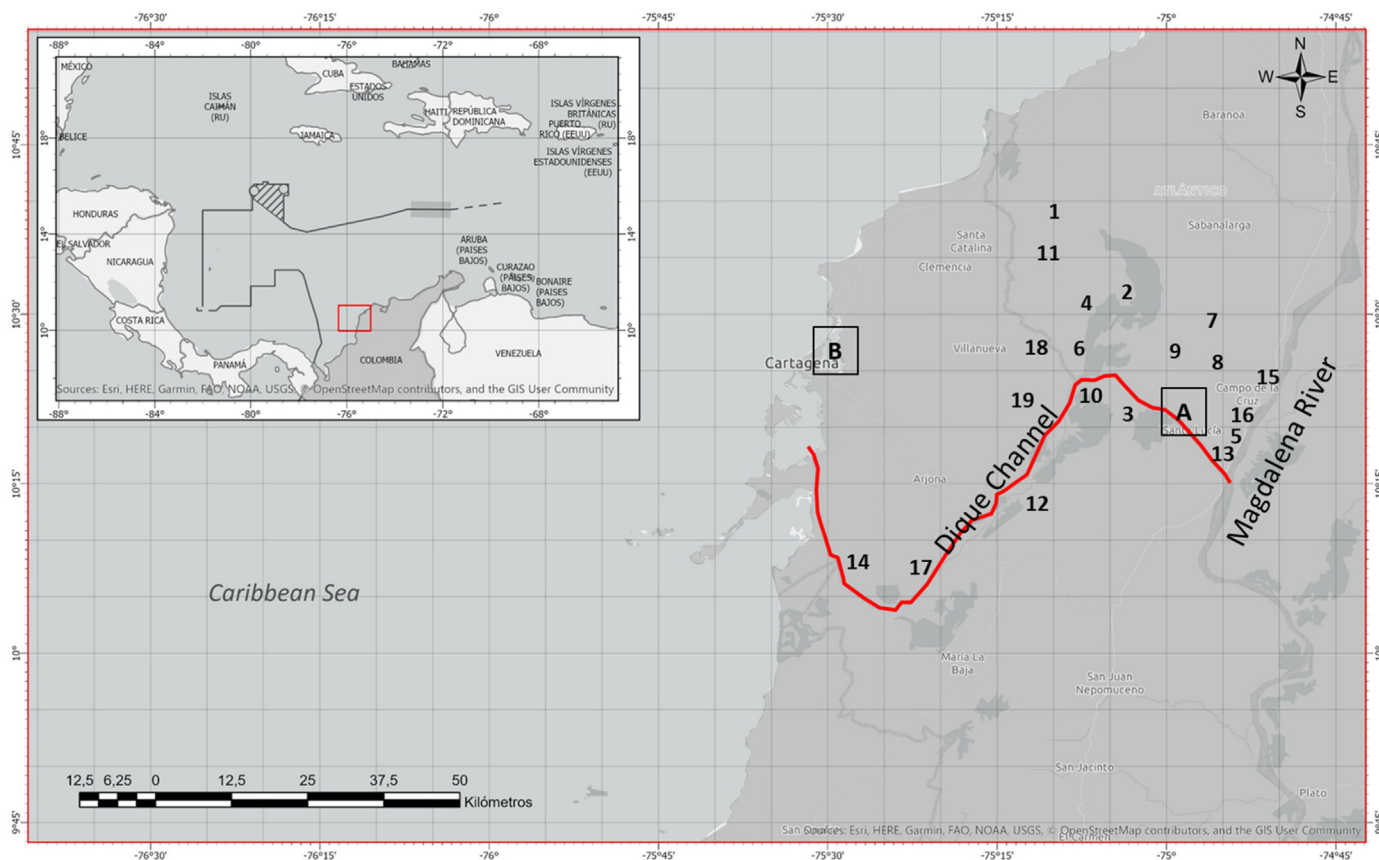


Fig. 1. Study area. The Dique Channel (red line) and associations represented, all part of the federation FEPASACADI. **A:** Granja LISMAR (Santa Lucia). **B:** Universidad de Cartagena. 1: FUPAMLUR. 2: ASOPACOR. 3: ASOPROSANCRI. 4: ASOPAMUR. 5: ASOPRASUAN. 6: ASOPACOVIR. 7: ASOMAMAVI. 8-AMPROCOAPESMA. 9: AMSOPROCOPEMSA. 10: ASPRAYEL. 11: FUPAMLUR. 12: FECUMO. 13: ASMUASU. 14: AMUDIC. 15: AGROPIGACRUZ. 16: ASOPROCANMER. 17: ASOMUPEAUNISAL. 18-AMUCASEK. 19: ANUC. Modified from Infraestructura de Datos Espaciales Marítima, Fluvial y Costera de Colombia (Coastal, Riverine and Maritime Data Infrastructure of Colombia-DIMAR, 2020). For full name of associations please see Table 1. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

activities; there was some level of fisher's organisation (i.e. Federation of agriculture, aquaculture and artisanal fishermen of the Dique Channel-FEPASACADI); it had been involved in previous projects with local institutions; and it had been affected by changes in environmental conditions.

During a previous project, FEPASACADI selected community leaders to participate in training workshops to avoid internal conflict between members, allowing a meritocratic process and ensuring participation across the whole area. From 37 individuals selected, only six (6) were female. Training provided included basic concepts in conservation biology and leadership skills. The community identified a need to work together on native products, empowerment and leadership, and also recognized themselves as fishing communities, perhaps for the first time. However, they were concerned about future fishing activity due to reductions in continental fishing catches in the last ten years. Additionally, the six women wanted to focus more on gender and family issues and were keen to have their own participatory workshop. All six women were thus involved in the present project.

4. Methods

FEPASACADI selected leaders from the women's communities following the same process described above. The call was opened to all 30 communities, to select 24 women (a maximum due to budget restrictions) covering the whole area of the Channel. Purposive

sampling was based mainly on the individual's leadership experience and knowledge. Selection additionally depended on three elements (mitigation strategies in brackets):

- ability to be released from their normal duties (payment for this was in place)
- ability to travel and attend (travel expenses were offered)
- ability to find or organize child care (two participants arrived with children)

The final result from the selection was 24 women (aged 24 to 65, all with secondary education and some technical training), belonging to 19 FEPASACADI associations (Fig. 1, Table 1). These women explained their leadership as twofold. First, they lead the household activities. Second, they are responsible for leading local associations within FEPASACADI (Fig. 1, Table 1).

A six-day participatory research residency at the aquaculture training farm Granja LISMAR (Fig. 1) was planned for the selected women leaders in September 2018. The data were collected during the residency by three researchers from Manchester Metropolitan University, with support from staff members from Universidad de Cartagena (2), the farm (1) and an entrepreneurship consultant, for a total of 31 participants. Limitations of the study include that it is one case study from a community in a particular country and therefore attempts to generalise from this should be done with caution.

Table 1

Associations, geographical area, main activities and numbers of women represented.

No association in Fig. 1	Women leaders (participants) under the context of this paper are women who belong to an officially registered association, with official ID, all part of the federation FEPASACADI. In some cases (mark with *) the woman leader was also the legal representative of the association in Colombia. The table is the summary of information supported by FEPASACADI and information collected from the participants during the residency.					
	Association	abbreviation	Geographic Area	Main Activities	No of women	No of Men
1	Fundación Municipal de Pescadores y Ambientalistas del Municipio de Luruaco	FUPAMLUR	EMBALSE EL GUAJARO: LURUACO	Aquaculture	10	152
2	Asociación De Pescadores Artesanales Del Corregimiento De Rotinet	ASOPACOR*	EMBALSE EL GUAJARO-ROTINET	Fishing	10	38
3	Asociación De Productores Y Emprendedores De San Cristóbal	ASOPROSANCRI*	SAN CRISTOBAL: CAPOTE, TUPE Y ZARZAL	Agriculture/ Fishing	10	13
4	Asociación De Pescadores Artesanales Del Municipio De Repelón	ASOPAMUR	REPELON	Agriculture/ Aquaculture	45	60
5	Asociación de pescadores artesanales de Suan	ASOPRASUAN	SUAN	Agriculture/ Fishing	20	11
6	Asociación de pescadores y Agricultores del Corregimiento de Villa Rosa	ASOPACOVIR	AQUACULTURE PONDS-REPELON	Aquaculture/ Aviculture	7	15
7	Asociación De Mujeres Manipuladores Y Pescadores De Villa Juana	ASOMAMAVI*	EMBALSE EL GUAJARO: VILLA JUANA	Fishing	30	16
8	Asociación De Mujeres Productoras Y Agricultoras de Manatí	AMPROCOAPESMA*	EMBALSE EL GUAJARO: MANATI	Agriculture/ Fishing	42	3
9	Asociación de mujeres Productoras y Comercializadoras de Pescado de Manatí	AMSOPROCOPEMA*	EMBALSE EL GUAJARO: MANATI	Fishing commercialisation	45	0
10	Association Agropecuaria Yema Linda	ASPRAYEL*	AQUACULTURE PONDS-SOPLAVIENTO	Aquaculture	8	8
11	Fundación Municipal de Pescadores y Ambientalistas del Municipio de Luruaco	FUPAMLUR	LURUACO	Fishing	8	152
12	Fundación Cultural para el Festival de la Mojarra Lora	FECCUMO	MAHATES	Agriculture/ Aquaculture	14	19
13	Asociación De Mujeres En Acción De Suan	ASMUASU*	AQUACULTURE PONDS-SUAN	Aquaculture	11	0
14	Asociación De Mujeres Para El Desarrollo Integral De Puerto Badel	AMUDIC	PUERTO BADEL	Aquaculture	15	0
15	Asociación municipal de Campesinos, agricultores, piscicultores y ganaderos de la vereda de la Cruces	AGROPIGACRUZ	SAN CRISTOBAL: CAPOTE, TUPE Y ZARZAL	Agriculture/ Aquaculture	8	39
16	Asociación De Productores Del Canal Del Dique-Suan	ASOPROCANMER	SUAN	Aquaculture	7	2
17	Asociación Municipal de pescadores y Acuicultores Unidos de Santa Lucia	ASOMUPEAUNISAL	SANTA LUCIA	Aquaculture/ Fishing	7	36
18	Asociación Municipal de Usuarios Campesinos de San Estanislao de Kostka.	AMUCASEK	SAN ESTANISLAO	Agriculture/ Aquaculture	25	10
19	Asociación Municipal de Usuarios Campesinos	ANUC		Agriculture/ Aquaculture	4	14
TOTAL REPRESENTED				914	326	588
PERCENTAGE REPRESENTED					36	64

4.1. Residency context

This research was conceived of as participatory action research (MacDonald, 2012) with cycles of action and reflection engaged in by all the practitioners situated within a phenomenological approach in an indigenist paradigm (Wilson, 2007). As such, practitioners (researchers, teachers, organizers, community leaders) were also seen as participants, whilst acknowledging that all participants have their own individual context. Each researcher's own worldviews, assumptions or intentions were first explored via Chiu's layers of reflexivity (Chiu, 2006) focusing particularly on Layer 1, self-reflexivity, in order to establish the positionality of researchers in relation to the researched phenomenon of the life world under investigation. A short account of researcher key characteristics are:

Researcher 1 works in the Department of Natural Sciences in a university in the UK. Female, Age 46. Born and lived in Colombia for 28 years. She is now a dual national, living in the UK for the last 18 years, married to a Greek-British citizen. Ethnicity mixed. She is a Spanish native speaker and speaks basic Greek.

Researcher 2 works in the Department of Natural Sciences in a university in the UK. Female, Age 35. Born in Colombia and lived there for 25 years. She then moved to the UK. Her race and ethnicity are mixed. She is a Spanish native speaker.

Researcher 3 works in the University Teaching Academy. Female. Age 58. Ethnicity mixed. She speaks basic Spanish and is an English native speaker; The researchers reflected on hidden assumptions; awareness of power and privilege; and what ideas are included and excluded inherently by the strengths of researchers and the degree of privilege they embody (Nicholls, 2009, p. 122). It was important to build trust and reflexive self-knowledge in all participants as partners. The residency was thus conceptualized within this reflexive framework to allow a qualitative approach to data collection to answer the research question.

Tools from Participatory Rural Appraisal (PRA) were used within this overall research strategy and are described further below. The aim was to encourage narratives to emerge from participants, as they reflected on their current situations. Therefore, early input was needed to get to know each other and to form broad objectives towards which we could all work.

Originally developed by Chambers (1994) PRA "an approach and methods for learning about rural life and conditions [by, with and from] rural people" (Chambers, 1994 p. 953) provided a set of principles by which we tried to abide at all times. There are three core principles of PRA. First, that outsiders behave in a facilitative rather than dominating manner. Secondly, that the methods used cause perspectives to shift from closed to open, from individual to group, from verbal to visual, and from measuring to comparing; and

Table 2
Data collection activities (● = Analysed as data; ten sources in total).

Stages	Activity	Aim
Introduction	Game Ground rules about participation and respect	Establish an environment of positive engagement and equal participation Establish: <ul style="list-style-type: none"> Relationships of trust That each person could consider themselves a researcher, asking and answering questions That each person's reflection on their research is thus valid An intentional openness to learning from and with others (respect) That there could be co - construction of games, playful interactions and informal exercises in which every person could participate That the inter - relationships that developed had utility to the community
Stage 1: Initial assessment	Questions and signing consent forms Pre-residency expectations Mapping participant's region and associations	Reading and signing consent forms Explore participants' expectations.● Surfacing knowledge of resources and localities, including geographic distribution of the female leaders in the area
Stage 2: Expansion on the SDGs	Reflection on Sustainable Development Goals (SDG) Tragedy of the Commons Justify your choice of the 4 most important SDG (application of SDGs within the community)	Clarify concepts: researchers gave a basic background regarding conservation and sustainability, particularly on the UN Sustainable Development Goals (SDG) and the Aichi targets.● Explore concepts of sustainable development, gender and empowerment.● Identify a baseline of the women's perceptions of sustainable development.●
Stage 3: Working together as communities	Strengths, Weaknesses, Opportunities, Threats (SWOT) analysis	Promote the idea of working as a community: researchers gave explanations of coaching techniques for leadership and working with others; commonly distinguished leadership types.● Encourage thinking around empowerment and leadership.●
Stage 4: Planning for the future	Empowerment discussion Mindfulness exercises; guided-silent walk "bus of empowerment" Networks exercise	Preparation for self-awareness activity Build self-awareness of leadership skills in community context Build awareness of existing networks and sources of support.●
	Discovering fishing community networks	Promote reflection about personal vs community empowerment; identify themselves as leaders (e.g. from personal network to community network).●
	Group reflection on community needs	Foresee the potential of their community to act upon common goals (e.g. identify common goals and locate the responsibility for achievement of those goals, community's vision, critical global citizenship).●
	Unstructured interviews with Dique Channel male community leaders Visit of the regional Womens' Minister	Engage male leaders in reflection.● 40-min visit to the residency to explore the way in which the women might work with the regional women's minister

thirdly that both insiders and outsiders share information, experience, food and training. PRA has been successfully adopted in similar studies (e.g. Aziz et al., 2011; Málovics et al., 2018) together with reflexive approaches, in order to be able to maintain explicit awareness of researcher's positionality and to monitor the effects of this on the investigation. Thus, we used various techniques to enable participatory learning and to generate data, which are described in detail in Table 2.

4.2. Description of the residency

The residency engaged participants in formal workshops and practical activities, as well as eating together, a morning walk, yoga sessions, a visit from the women's minister and a final party spontaneously organized by the participants. Pre- and post-workshop evaluations were used to gather further data for environmental and social understanding of the context. The first part of the residency (4 full time days) addressed sustainable development, empowerment and leadership, and is the subject of this paper. The second part of the residency was aimed at the women learning practical techniques for entrepreneurship, aquaculture and action planning and purely focused on skills acquisition with no research conducted.

The four research-focused days included four main stages. Table 2 describes stages, activities, and data items. After the residency, researchers continued structured reflections, while data items and outputs for analysis were organized and collated. No formal interviews were conducted with the women leaders, as it was felt that their status as collaborators in the research was paramount. This approach was deemed congruent with allowing women leaders to select the capabilities they felt were most

important. Participation in the activities was therefore recorded in written form on handouts, flip charts and (photographed) white boards. All the outputs thus gathered were then transcribed and coded as described below. Two interviews were also conducted when the opportunity for these arose with two of the male leaders.

4.3. Data analysis

The inductive data analysis was done in four stages using NVIVO 10. Units of analysis were created by assigning codes to data (Lincoln and Guba, 1985). In the first stage, open coding was developed using words from the text, which gave name to the first codes. In the second stage, selective coding involved merging similar codes into sub-themes. At this stage codes were named and renamed as deemed appropriate by the researcher. Codes were changed several times to avoid overlaps until a distilled version of the sub-themes was created. In the third stage, subthemes were merged into themes. Finally, theoretical coding involved identifying relationships between codes, which had an action and a direction (e.g. x supports y).

5. Results and discussion

5.1. Key themes and subthemes

Women leaders explored what sustainable development and leadership meant to them (Stage 1–4, Table 2), linking these concepts to their feelings of empowerment (Stage 3, Table 2). Fig. 2, shows a clear emphasis on discussion of issues that empower, rather than on issues that disempower.

The women felt empowered by nine main factors, especially

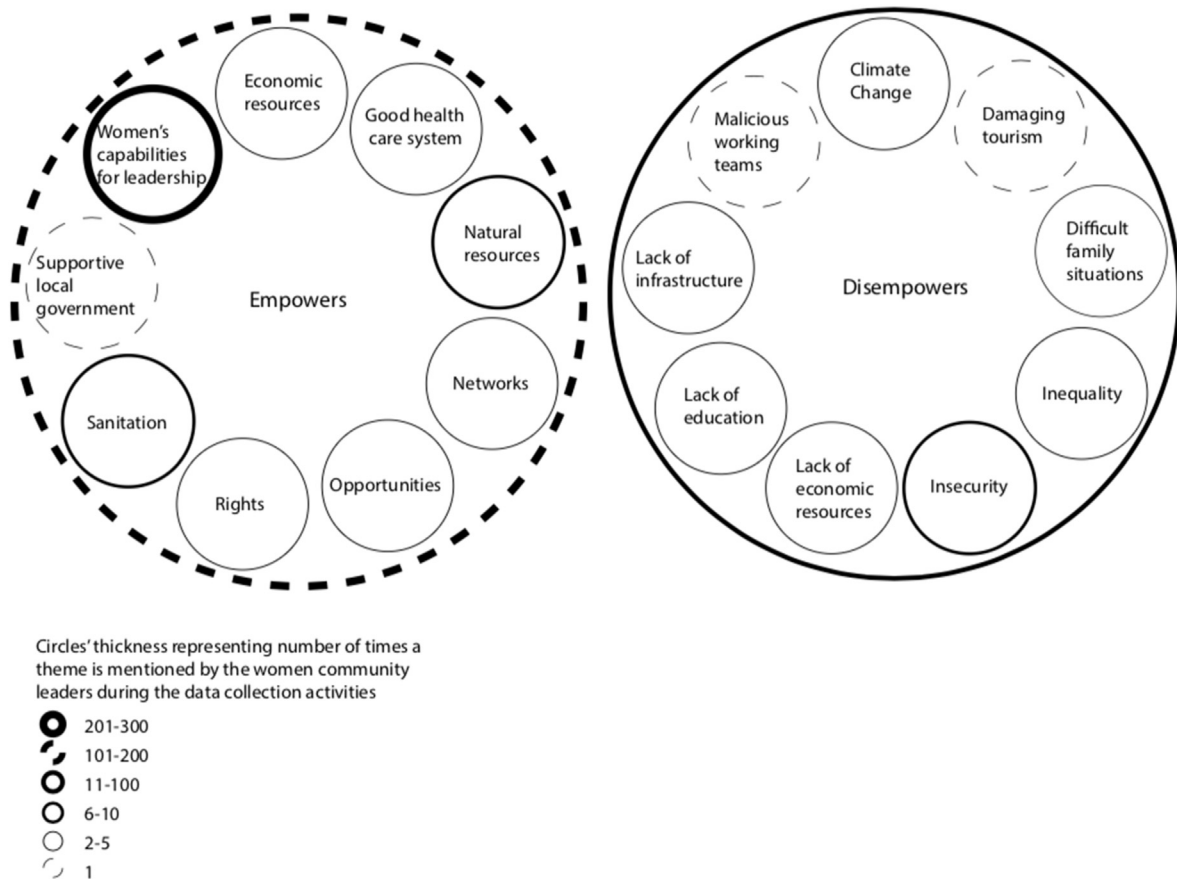


Fig. 2. Empowering and disempowering factors for women community leaders in fishing communities of the Dique Channel, Colombian Caribbean.

their own capabilities and access to natural resources, and water (Fig. 2). Systems of support (health care, networks, opportunities, rights and local government) were also important (Stage 4, Table 2). Conversely, women felt disempowered by lack of safety, or processes such as climate change. Perceived inequality and lack of support for education, or interpersonal difficulties in the family or malicious team working experiences were of particular importance (Stage 1,4, Table 2).

5.2. Women's capabilities for leadership in the Dique Channel

The women saw their capabilities as leaders as highly empowering, which was further explored (Table 3) to illuminate how development of capabilities may facilitate pathways to sustainable livelihoods. Orientation to education, action and service were prevalent themes in the data.

Education (being educated or able to educate others) was seen as the most important capability for them (Table 3), indicating women's role in leading capacity building within their communities with phrases such as "replicate within my community" or "demonstrate that women can do things". This emphasis might be expected because education and knowledge transfer has traditionally been gender-related, or a 'woman's job' (Ehrich et al., 2020). Women were also perceived by male community leaders to be good learners:

"She learnt and went through the whole training. There was a clear advantage in this initiative. Although she didn't know much, she had the support from a technician. She didn't know then but now, it's a different story!" [male community leader]

Table 3 shows that the women leaders saw capabilities oriented towards action, service, and value as important in relation to sustainable development. The concept of service, or capability to consider the needs of others, was tightly tied to a family- or team-oriented position. Women community leaders in the Dique Channel are thus likely to share their learning and support their families and communities, in turn supporting the success of projects for sustainable development at a larger scale.

Interviews with the male community leaders indicated admiration of the women leaders' capability to consider others' needs - an essential capability for sustainable development.

"When we did the activity about taking fish from the sea [bucket with sweets representing sea with fish] they didn't take all the fish, they were thinking of taking one for each of their children, but not taking more than that, and that's a problem that I have with the fishermen, [...] women have a different chip than men." [male community leader]

A family-orientated capability was recognized both by women and the men they work with, as being something valuable to the community:

"... it feels like extraterrestrial beings, a completely different type, it's like women see things from a different perspective, and I think it could help change the values [of the community]." [male community leader]

Table 3

Key women's capabilities for leadership in the context of sustainable development.

Women's capabilities for leadership	Number of activities	Number of mentions
Education orientated	5	51
Action Orientated	5	51
Service Orientated	3	33
Values orientated	4	17
Entrepreneurial	4	13
Team orientated	2	9
Empowerment Orientated	3	6
Motivated	3	5
Satisfied	2	5
Finance Orientated	3	5
Family Orientated	2	4
Power Orientated	2	4
Confident	3	4
Positive	2	2
Able to compromise	1	1
Data Orientated	1	1
Innovation Orientated	1	1
Total	5	212

Notes: Number of activities refer to the number of activities in which each of the women's capabilities for leadership (e.g. Action orientated) were mentioned by the women leaders. Number of mentions refers to the number of times each women's capabilities for leadership (e.g. Education orientated) were mentioned during the data collection part of the residency.

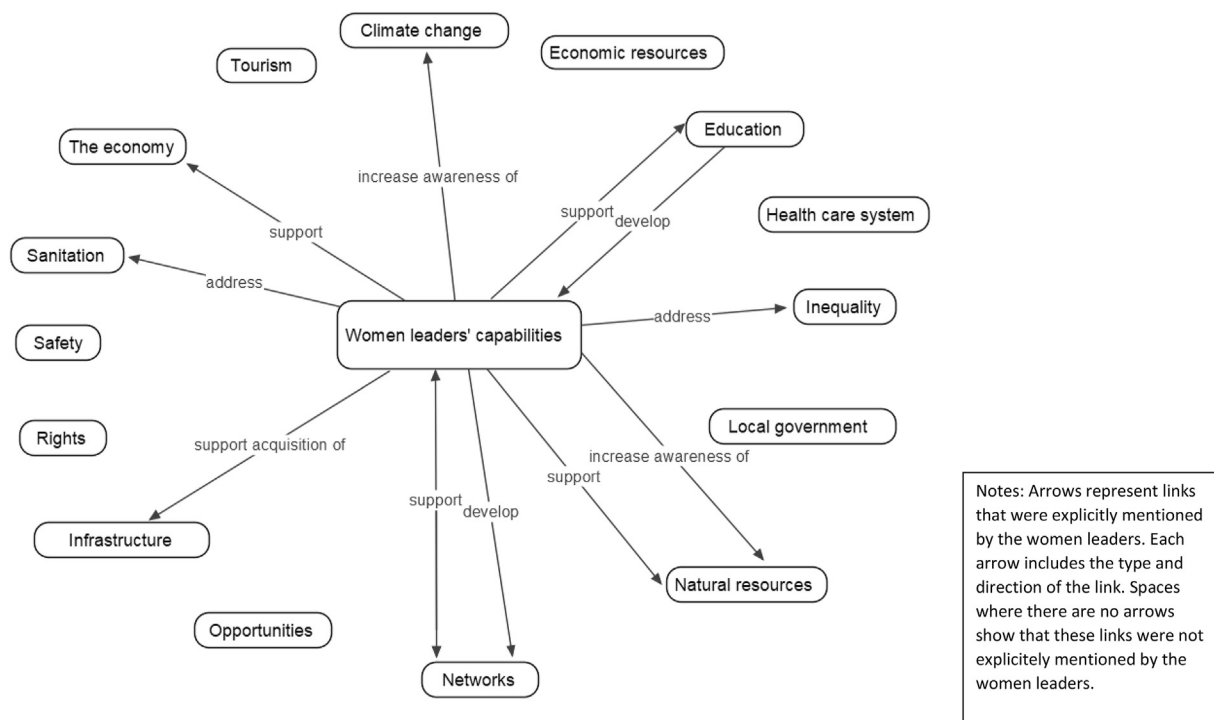
Being a mother, or doing activities that benefited the family, were capabilities that women valued. One potential way to support the implementation of sustainable development would thus be to focus on enhancing women's capabilities for leadership, particularly in transformational leadership and in the context of family-oriented sustainable approaches for the common good, which have also been noted in other contexts (Díaz, 2018; Shinbrot et al., 2019).

5.3. Interaction of capabilities with areas of impact

The data revealed evidence of women's perceptions of their

capabilities interacting with areas of impact in a number of ways (Fig. 3). Two of the areas of impact, Education and Networks, had reciprocal relationships with capabilities. For example, women leaders perceived that education affected their capability development, whilst also seeing that their developed capability 'being educated-orientated' influenced education for others.

This important link between leadership, education and empowerment (Figs. 2 and 3) (Pullen and Vachhani, 2018; UNESCO, 2017) was evident. In particular, there was recognition of the importance of women role models to change cultural norms, promote networks and expand local business. Women also saw networks as strongly and reciprocally linked to capabilities. This shows

**Fig. 3.** Women leaders' capabilities and key areas of impact.

that women leaders' capabilities are crucial for the development of networks in the Dique Channel.

Fig. 3 also shows six areas of impact which linked to capabilities but without reciprocity. In relation to climate change and natural resources, women saw that their capability of increased awareness had developed, but did not identify any potential benefits coming from these areas of impact. This is a problem of perception of threats vs. opportunities, which could perhaps be improved through further education and experience of leadership, enabling them to foresee possible solutions beyond the short term.

Similarly, women leaders perceived that their capabilities had potential to address inequality and issues such as sanitation though had no specific ideas about how to tackle these. In terms of developing capabilities to support the local economy and improve infrastructure (e.g. access to electricity), women leaders did not feel their support would bring benefit to their own access to resources. These results show how women are used to give support to their families, loved ones and their communities without expecting a return, mainly because their only return is to ensure the wellbeing of their families. Viewing this through the lens of feminist political ecology suggests that feelings of empowerment in relation to access to resources must be constantly negotiated in relation to prevailing social, political and environmental contexts.

The concept that women's work for their families (domestic services) is not productive was established in the 1950s under the UN system for National Accounts -UNSNA (Rai and Hoskyns, 2016). UNSNA maps national economies and establishes GDPs. Until 1950, Norway was unique in this respect, estimating the value of domestic services (unpaid labor). However, this was later omitted "in the interest of producing internationally comparable national account figures" as it was expensive to measure and not done elsewhere (Rai and Hoskyns, 2016, page 396). Consequently, most of the unpaid work done by women (e.g. child and elderly care) became invisible with no explicit link to other economic processes. As Rai and Hoskyns (2016, page 396) also highlight: "if you are invisible as a producer in the GDP, you are invisible in the distribution of benefits". Therefore, a starting point would be to establish the value of the services provided by women, particularly women community leaders, to the local economies. This first step enables community leaders to understand the benefits they receive for the services they provide but will also allow communities to understand the importance of their women leaders in the development of local economies.

The absence of perception that their capabilities could impact on climate change, natural resources, inequality, sanitation, the economy, and infrastructure (e.g. access to electricity, roads) may suggest that certain areas of impact appear fixed and the women did not feel they could effect change in these. In the case of water and sanitation (water as part of natural resources, see Fig. 3), women emphasized that water is the most important element for their lives:

'without water we are nothing'. [workshop participant]

However, water was not included as having a particular interaction with their capabilities, suggesting that water was considered simply as an important resource, rather than an issue to be addressed. Water has always been available through the Dique Channel and most families do not depend on, or pay for water services. Indeed, clean water and sanitation were seen as empowering (see Fig. 2), another example that long-term vision (e.g. climate change threat) is an area for development.

The absence of climate change as a factor that interacts with these women's perceived capabilities shows that this is still an abstract concept for them. Women leaders understood that they

need to work with some of the SDGs such as education (SDG 4), but it was difficult for them to understand what to do about climate change (SDG 13) because they are just starting to recognize this as a reality (potential threat) and had not looked for alternatives. However, when concrete examples were evident (e.g. 2010 Dique Channel flood and 2014 droughts), they understood the implications for their lives, livelihoods and wellbeing. Other related examples for mitigating and adapting to climate change could support the development of the women leader's capabilities and identify areas of impact. Thus, awareness of women's capabilities and impacts in other fishing communities based in coastal regions (e.g. see Allison, 2011; Van Mulekom, 2008) could improve opportunities for women in Colombia.

5.4. Implications for future pathways towards sustainable livelihoods in the Dique Channel

As the result of the group reflection on community needs (Table 2, Stage 4) the women identified their vision and mission (Fig. 4) which is their pathway for sustainable development.

It is important to address disempowering issues such as climate change and perceptions of inequality. Addressing environment-related issues could support women community leaders' empowerment, in turn supporting outcomes of projects based on sustainable development principles. Therefore, projects in the Dique Channel developed by women leaders require more holistic support systems focused on a range of issues, rather than solely specific project outcomes (i.e. fishing practices). These ideas echo Shinbrot et al. (2019) who suggest that addressing issues that empower women (e.g. inequality) may help implement sustainable development more effectively.

Although the two men involved in this project showed they value the role of women in the community, male chauvinism persists in Colombia. Therefore, it is essential to address inequality and support women's empowerment. This would allow women to develop their leadership for sustainable development and improve economic dynamism, as suggested for fishing communities in coastal regions of South East Asia (Allison, 2011).

There were signs of changes to male community leaders' perceptions of women's capabilities for leadership, as they recognized the potential of women leaders in community growth, with their central position in the family, good management of household finances, and different outlook from men.

"That's why I say that I feel like an alien because I've never worked with only women. Men tend to manage the meetings, and because we are a bit chauvinistic, women tend to be less visible than men. But now I am a bit worried because I am not a woman (laughs) [...] Women have a different perspective that perhaps I've never analysed before" [Male community leader]

Women leaders working with male allies can help deal with social problems more effectively (Shinbrot et al., 2019), bringing together consideration of environment with human well-being and socio-economic issues. Within the balances of intersectionalities from a feminist political ecology standpoint, treating men as 'subjects to be interviewed', with women as active participants, may also have had some effect. Community-based projects for sustainable development in Latin America have better chances of being successful when the community members are empowered and active (Oldekop et al., 2012; Bittar-Rodrigues and Prideaux, 2017; Mendoza-Ramos and Prideaux, 2018). Considering that women community leaders in the Dique Channel value empowerment in their role as leaders, sustainable development projects initiated and implemented by them in the Dique Channel, could have good

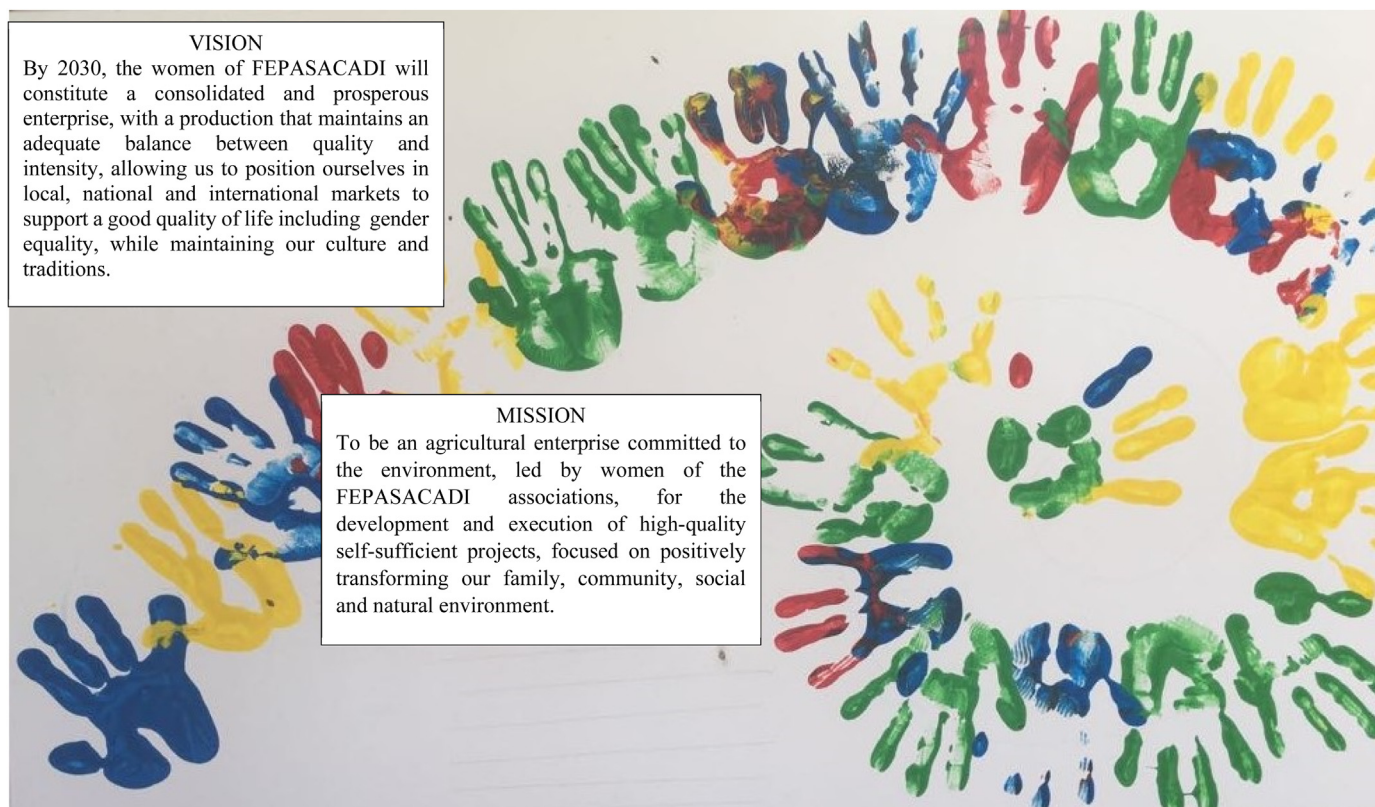


Fig. 4. Women leaders shared mission and vision for pathways for sustainable development.

chances of success.

However, sustainable development projects in Latin America also require significant time and support (Bittar-Rodrigues and Prideaux, 2017) particularly from the government (Saavedra- Díaz et al., 2016). Indeed, government's support was one of the empowering factors mentioned by women leaders (Fig. 2). Another area where external support is important is in emergency aid. Emergency aid may change power relations between the helped and the helper (Andreotti, 2006). There was some evidence from the regional leader of the federation that the strong link between FEPASACADI and the Fund for National Adaptation-peace and Development (Fondo Nacional de Adaptación Desarrollo y Paz-in Spanish), is an example of this phenomenon. The helper is more powerful than the helped, creating a dependency for money or other resources that sustains unequal power relations, in this case between FEPASACADI and the Fund.

These dynamics might create an institutionalized narrative of 'soft' global citizenship (Andreotti, 2006; Pashby et al., 2020). Here, the community feels that lack of development, education or resources contribute to their poverty and sense of helplessness. The helper (institution or government) feels a moral responsibility and gives a paternalistic kind of support, promoting neocolonial power relationships. Transforming these soft global citizenship narratives into more critical global citizenship narratives may best be done when there is no imminent risk to the community.

If the community can recognize problems of inequality and injustice, as well as unequal power relations, they may be able to assume more autonomy and responsibility to define how they want to develop, further promoting the community's empowerment. This transformation in the approach to empowerment (including women's empowerment) could also have a positive impact on gender equality. Moreover, challenging soft global citizenship

narratives could help empower women leaders and support the development of leadership for sustainable development (Pashby et al., 2020). One way to challenge power relations could be to explore, with community members, the impact of women leaders' capabilities in all key areas linked to their empowerment.

A further point to note is that even though natural resources and sustainable development were seen as important and empowering, women leaders struggled to identify how to apply that knowledge for the benefit of the community. Their (intrinsically female) service-orientation, has not returned evident benefits for them either. Under the capabilities approach, women are beginning to develop valued 'beings and doings' for leadership in their communities, particularly in relation to political voice. As Von Jacobi et al. (2017) note, participation of marginalised individuals is vital in tackling marginalisation. These elements of women's empowerment will need to be analysed with the community to allow them to identify pathways for future community wellbeing.

6. Conclusions

A framework of feminist political ecology enabled consideration of social factors and women's identity in leadership positions, including their relationship to ecological processes in fishing communities in the Dique channel. Women's capabilities for leadership were found to be crucial for capacity building within communities for sustainable development. These capabilities were found to interact with perceived impacts. From those capabilities identified, the expansion of capabilities for continued education and networks will have a positive impact on the community.

Increased awareness about climate change and natural resources did not translate, for these women, into potential benefits from the areas of impact. However, a lack of awareness or

knowledge of how their capabilities affect, and are affected by, key issues such as economic resources and women's rights may hinder sustainable development efforts. Further areas for development include practical access to education, management of family-related issues and enabling women to have longer term vision.

There is a need to address inequality, further supporting women's empowerment, and to improve ecological knowledge and the economic dynamism in the area. Exploring the impact of women leaders' capabilities with members of the community, will help challenge existing power dynamics in the future. The male community leaders interviewed, saw the women leaders as smart, good learners, who think differently in terms of their main economic activity and take a central position in the family, managing household finances. Enlisting the male community leaders' support is thus essential. Thus, women leader's capabilities should be a major focus for the development of frameworks that support education for sustainable development in rural fishing communities in the global south.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Lina M. Barrios: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing - original draft, Writing - review & editing, Visualization, Supervision, Project administration, Funding acquisition. **Alicia Prowse:** Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing - original draft, Writing - review & editing, Visualization, Supervision, Project administration, Funding acquisition. **Valeria Ruiz Vargas:** Conceptualization, Methodology, Validation, Formal analysis, Investigation, Resources, Data curation, Writing - original draft, Writing - review & editing, Visualization, Supervision, Project administration, Funding acquisition.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jclepro.2020.121277>.

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